

INFORMATION
-------------

**AGENDA ITEM:** Telecommunications Infrastructure

**GENERAL OVERALL PROGRAM UPDATES:**

The passage of the Library of California Act was preceded by the passage of the California Library Services Act (CLSA). In 1998 CLSA funds were allocated by the California Library Services Board (predecessor to the LoC Board) for \$7,500 grants to public libraries to acquire Z39.50 server software for their library automation systems. Using Z39.50, remote users could search a library's online catalog via the Internet.

As part of its implementation efforts the Library of California Board (LoC Board) assumed responsibility for making future Z39.50 server software grants and expanded the program to include all types of libraries meeting certain eligibility and technical requirements.

In addition to the Z39.50 server grants, the LoC Board also uses CLSA funds to subsidize the ongoing cost of Z39.50 access to public library catalogs (\$500 per year), and to subsidize the ongoing cost of Z39.50 Gateway Client systems that are managed by California Cooperative Library Systems (\$5,000 per year).

The purpose of funding the development of Z39.50 connectivity is to establish the infrastructure necessary to create a virtual statewide database representing the holdings of California libraries. Such a database is an important component of a cluster of access services envisioned in the Library of California Act.

**CURRENT STATUS:** A strong focus of the Library of California is the development and support of a telecommunications network to enable all libraries to share their resources with each other. Z39.50 is a protocol that allows for the searching of one or more library online catalogs over the Internet, regardless of the proprietary software and hardware on each local computer system. The Board's decision to continue and expand the Z39.50 server software support and server access programs is facilitating the development of a network of virtual library catalogs for access by California library users. It is critical that this network be developed and maintained to establish a statewide database that reflects the most current holdings of California's libraries and to support sharing of resources for all Californians.

At its February 1999 meeting the Board directed its Chief Executive Officer to implement a Z39.50 server software reimbursement program for libraries who meet

the eligibility requirements for participation in the Library of California and technical requirements that promote open access to library catalogs via Z39.50 and the Internet. Other specifications used to screen or prioritize applicants include participation in multitype resource sharing through an affiliation with a CLSA Cooperative Library System; or through participation in the CLSA Interlibrary Loan reimbursement program; or by type of library and geographic distribution. A maximum of 100 grants may be awarded at \$7,500 each for a total of \$750,000 from Library of California funds. Grants will be made available in multiple cycles, extending into FY 1999/2000, until funds are exhausted. In response to the February directions staff prepared and distributed application materials, with an initial deadline of April 30. Twenty-five applications were received in the first cycle, representing libraries of all types from throughout California.

In July staff released materials for a second cycle of grants ending September 24, 1999. As with the earlier group applicants represented multitype libraries in most planning regions. The advice of the Board to expand the eligibility somewhat to include libraries that were purchasing new systems, along with libraries with existing systems, was helpful to several applicants.

#### **Z39.50 GRANTS – LIBRARY OF CALIFORNIA – CYCLE 1 AND CYCLE 2**

<b>Library Name</b>	<b>City</b>
Plumas County Library	Quincy
La Sierra University Library	Riverside
Rancho Mirage Public Library	Rancho Mirage
El Dorado County Library	Placerville
Laurance S. Rockefeller Library of the California	San Francisco
Altadena Library District	Altadena
Covina Public Library	Covina
Bruggemeier Memorial Library	Monterey Park
Monterey Institute of International Studies	Monterey
Oceanside Public Library including branches:	Oceanside
King/Drew Health Sciences Library	Los Angeles
Berkeley Public Library	Berkeley
Live Oak High School	Morgan Hill
Upland Public Library	Upland
City of San Bernardino Public Library	San Bernardino
Lassen Community College District	Susanville
San Jose Public Library	San Jose
Azusa City Library	Azusa
Hemet Public Library	Hemet
Coronado Public Library	Coronado
Rancho Cucamonga Public Library	Rancho Cucamonga
Whittier Public Library	Whittier
Beverly Hills Public Library	Beverly Hills
San Pedro High School Library	San Pedro

The Burnham Institute	La Jolla
Sacramento County Day School	Sacramento
Union Mine High School	Diamond Springs
Richmond Public Library	Richmond
Glendora Public Library	Glendora
El Centro Public Library	El Centro
Dixon Unified School District Library	Dixon
Sacramento Public Library	Sacramento
Chamberlin Library	Monterey
Butte County Library	Oroville
Reeves Medical Library, Cottage Hospital	Santa Barbara
Library of Hope International University	Fullerton
Pine Ridge Learning Center	Paradise
San Bernardino County Library	San Bernardino
U.S. International University Library	San Diego
Paradise High School	Paradise
Willows Public Library	Willows
Alhambra Public Library	Alhambra
Milton J. Chatton Medical Library	San Jose
San Diego Zoo Library	San Diego
Loretto High School	Sacramento
Paso Robles High School	Paso Robles

### *Cycle 3 Grant Applications*

Based on some problems encountered with the existing documentation, staff have revised both the application and grant award materials to be consistent with current Board guidelines for the awards, and to simplify the application process. A third cycle of Z39.50 grants, with a revised packet was released the week of January 13, 2000 (Exhibit A). The announcement has been mailed to a broad list and was posted to multiple electronic mail lists used by all types of libraries throughout California, and on the Library of California web site.

The revised applications address the following issues:

#### *Preparedness:*

Experience shows that some libraries that applied for the grants were not prepared to implement them. The most common problem was a failure to discuss the purchase and installation of Z39.50 software with their automation system vendor before applying for the grant. Several libraries had to return the grants when it was found that Z39.50 software was not available for their automation systems or that it could not be installed on their automation system. The revised materials address this problem in two ways:

- A new instruction document that provides more information about Z39.50 and its implementation issues.
- A requirement that applicants submit a copy of a quotation for Z39.50 server software from their system vendor.

#### *Collection Size:*

There were also concerns expressed by a consultant working on Z39.50 projects among small libraries that some of the systems were not capable of supporting Z39.50 and that their collections were so small as to be of marginal interest for resource sharing. The new application addresses this issue by requiring a minimum collection size of 2,500 titles. It is expected that an automation system capable of supporting a collection of this size can also support Z39.50 (possibly with additional system upgrades) and that a collection of 2,500 titles or more represents a significant regional resource-sharing asset.

To avoid excluding smaller collections that may be of significance regionally or statewide, applicants are offered the opportunity to describe their collection and to explain its significance.

#### *Remote Access Issue:*

There has been some confusion with the definition of “remote access” to a Z39.50 server. A simple security scheme used by some libraries is to limit access to their servers to only one “client” computer system using its unique I.P. (Internet Protocol) address. This means that other clients cannot search the system because their I.P. addresses are not authorized. In projects where there is a regional gateway client the gateway client is the authorized I.P. address. What this means is that remote searching of the server is possibly only through the authorized gateway client.

A preferred definition of “remote access” is to allow access by any remote client, without limitation by I.P. address. This model is preferred because it allows for a greater level of access, using a variety of search profiles, from a variety of search sites. However, it requires that libraries provide security by mechanisms other than I.P. filtering. Each library’s network and Internet connection is different. Therefore, each security solution will be different. It is likely, however, that there will be an additional cost to the library to screen access on a more sophisticated level, such as a firewall or proxy server.

The new Z39.50 grant applications address this issue with the following language:

“Library can establish control over workstation, system, and network security (including firewalls) making it possible for remote Z39.50 clients to search the library’s server without IP filtering or other restrictive access measures.”

It should also be noted that the administration of the Z39.50 server software grant program has been transferred from Mark Parker to Ira Bray.

### **ADDITIONAL PROJECTS FOR LoC BOARD CONSIDERATION:**

Additional Z39.50 projects for Library of California consideration might include the following:

*Regional Gateway Z39.50 Server Deployment:* Some California Cooperative Library Systems have Z39.50 gateway server projects allowing for public access to participating library catalogs. Grants could be made to re-deploy existing system-level gateway server systems to accommodate regional network access and to deploy new gateway servers in regions that do not have them. Such grants could also support the cost of high-speed connectivity to each regional gateway server.

Estimated cost:        Access only - \$50,000 - \$150,000 per installation  
                              Electronic ILL - \$250,000 – \$900,000 per installation

*Re-indexing Grants:* One of the problems encountered frequently in Z39.50 projects is inadequate electronic indexing of the library's online catalog database. Inadequate indexes are the most frequent reason for search failures or incomplete search results. Grants could be made to eligible libraries to pay for the re-indexing of their databases, to make searching their catalogs by Z39.50 more effective.

Estimated cost:        \$5,000 per site.

### **Other Telecommunications**

In addition to continuing the Z39.50-related grants, telecommunications program funds might be allocated to the following projects/programs:

*MCLS/SLS/SSCLS (Arroyo Seco Regional Library Network) Call Center Reference Project:* This project was started with LSTA funds to develop Call Center software to facilitate the development of a virtual Internet-based reference center. Reference librarians can be connected to library users via the Internet and browse web pages collaboratively in real-time to address their reference needs. The Library of California could assume some or all of the cost of developing and deploying this service either regionally or statewide.

Estimated cost:        TBD

*Gates Library Initiative Computer Lab Ongoing Support:* In 2000 the Gates Library Initiative will provide \$11 million to California public libraries for computers and

software to address the “digital divide”. Included in these grants are forty-one computer training laboratories for both staff and the public. The Library of California could wholly or partially subsidize the ongoing cost of these labs as statewide resources that would be used to train library staff and public on how to use Library of California and other digital resources.

Estimated cost:       \$5,000 per lab X 41 = \$205,000

*Gates Library Initiative Rural Library Ongoing Support:* The Gates Library Initiative provides for the installation of telecommunications access for participating libraries. Where possible, this access is via high-speed direct connections. The Library of California could support the cost of access for rural libraries - eligibility to be determined - with the qualification that they also apply for the California Teleconnect Fund and the E-Rate.

Estimated cost:       TBD

*Patron Authentication:* Provision of Library of California digital services will require the functional equivalent of a Library of California card. This equivalent almost certainly will be authentication servers having the capability to query a patron’s “home” automation system to determine their eligibility for Library of California services and their current status as a library patron. There are several options for authenticating patrons electronically. These options must be evaluated and at least one authentication project could be started to determine the parameters for future deployment of this service, whether it be regionally or statewide.

Authentication servers may play a critical role in the provision of licensed databases at reduced cost. One significant obstacle to regional or statewide database licensing is how to ensure to vendors that only patrons who are authorized to do so will have access to the licensed database. The co-development of a licensed database project and an authentication server project could be one way to resolve this issue.

Estimated cost:       TBD

*Portal Development:* To date there has been little discussion regarding the development of the Library of California’s digital presence via the Internet. As users access Library of California electronic resources, such as gateway servers or databases, how will they be made aware of Library of California sponsorship? There is a broad array of options, ranging from printed credits, or an “icon”, on individual library web pages, to the development of regional portals, to development one statewide web-based portal as gateways to all services. There are also options for “co-branding”, or sharing space on a regional or statewide web page, so that both the local library and the LoC can share in the sponsorship credit.

Estimated cost: \$50,000 to study, make recommendations, and develop prototype.

## **RELATED ISSUES TO COME BEFORE THE BOARD IN THE FUTURE:**

### *LINKED SYSTEMS STUDY*

In November 1999 the LoC Board received a Linked Systems (i.e. Z39.50) Update Study from Joan Frye Williams, a library consultant. The Policy summary of this report is as follows:

#### **“I. Policy Summary**

The principal finding of this Linked Systems Study Update is that California is making steady progress towards the creation of a virtual catalog for resource sharing purposes. Libraries are moving from demonstration of the feasibility of the linked systems concept to practical implementation of linking technology on a regional basis.

Some Linked Systems Projects have encountered implementation problems along the way; recommendations for addressing those problems are detailed in this report. None of these implementation problems is sufficiently serious to warrant any change in the overall statewide database strategy.

In the course of this study, it became clear that Linked Systems Projects represent just one part of the technology infrastructure necessary to support electronic resource sharing statewide. This report identifies twenty components of a proposed Library of California Technology Infrastructure, including:

1. Commitment
2. Local MARC Databases
3. Local Online Catalogs
4. Management-level Understanding of Basic Networking Issues
5. Technology Project Management Skills
6. Local Wiring and Data Communications Networks
7. Local Network Maintenance and Troubleshooting Skills
8. Internet Connections
9. Web-ready PCs for Internet Searching
10. Policies for Managing New Electronic Services
11. Internet Skills
12. Local System Upgrades to Web Browser-based Catalogs
13. Local Implementation of Z39.50 Client and Server Software
14. Regional Broadcast Search Systems

15. Interlibrary Loan Messaging System(s)
16. Interlibrary Loan Management and Extended Circulation System(s)
17. Materials Delivery and Return System(s)
18. Patron Authentication System(s)
19. Electronic Collections
20. Self-service Electronic Borrowing

For each of these twenty components, this report offers a brief description, assesses progress to date, indicates any problems encountered, notes programs that currently support efforts in this area, and recommends additional activities for moving forward. This information is summarized in a chart at the end of this Policy Summary.

By developing future statewide technology policies and initiatives in the context of the proposed Library of California Technology Infrastructure, it should be easier to:

- move everyone forward by assisting libraries that are currently at different stages of implementation;
- reward innovators without widening the “digital divide” or leaving anyone behind;
- identify and address gaps in technology development statewide;
- coordinate the purchase of new computer hardware, software and services with the skills needed to use them effectively;
- develop programs that yield important benefits to local libraries as well as to cooperative projects, and
- coordinate federal, state and local investments in technology to maximize the return on available funds.

*It is recommended* therefore that the Library of California Board adopt the twenty components of the proposed Library of California Technology Infrastructure as a framework for developing future technology policies and initiatives.

This recommended policy action has no fiscal impact. Proposed expenditures for specific activities in support of some or all of the twenty components will be presented to the Board for separate action.”

#### *CAL-ZIG LSTA GRANT*

The Linked System Update Study provides a broad array of options for addressing Z39.50 linkage and access issues. The State Library has begun to address some of them using LSTA funds under a program called CAL-ZIG (California Z39.50 Implementers’ Group) in collaboration with the Mountain-Valley Library System. Specifically addressed in CAL-ZIG are the following components from the Linked



## Systems Update Study.

- #3 Statewide technology census
- #3 Targeted grant funding for public libraries for local online catalog system purchase and installation
- #5 Technology management skills
- #13 California Z39.50 Users Group  
49-99/Joe Ford Z39.50 toolkit

## *GATES LIBRARY INITIATIVE*

Staff visited the Gates Library Initiative (GLI) offices in Seattle during the week of January 24 to receive an orientation on the California grant program and to discuss the coordination of installation and training. The visit coincided with the announcement of awards for the remaining California applicants. Participation in the program is exceptionally good, with a very small number of eligible sites electing not to apply for grants. Installation of the first libraries in Southern California is slated to start the week of January 31.

In November 1999, the Gates Library Initiative split into two components. The standard statewide program was used for libraries with service populations less than 300,000. A new program, the “Accelerated Grant Program” was started for all public libraries in the United States with service populations greater than 300,000. These two programs overlapped in California with grants being awarded to both groups of libraries within two weeks of each other. A list of library branch sites receiving awards under the standard program is attached as Exhibit B. A list of library jurisdictions receiving awards under the accelerated program is attached as Exhibit C.

In addition to the site awards, many California libraries received grants for computer training laboratories. These labs are used for both staff and public training programs. Under the LSTA-funded InFoPeople program ten of the Gates labs will be doubled in size to increase their training capacity and to integrate them into the InFoPeople program. A list of Gates labs is attached as Exhibit D. At the time this report was drafted the list of InFoPeople awards was not available.

## *Rural Telecommunications*

The Seattle visit also presented an opportunity to discuss rural telecommunications access. GLI implementation offered a unique opportunity to determine whether significant telecommunications and Internet access barriers exist for California libraries, particularly those in rural settings.

GLI installations vary from 1-2 workstations at smaller sites to up to six workstations and a content server at larger sites. Generally, the smaller 1-2 workstation sites receive modem access and the larger sites receive direct connects to the Internet. The final determination of services is dependent upon the size of the installation, the service hours of the site, and the availability of service from the local telephone company, or Internet Service Provider, and affordability for the library.

GLI staff reported the following:

- Almost all sites are able to obtain adequate service for their installation. As of January only 5-6 sites were still without services. GLI staff felt confident that access for these sites would be resolved.
- Those sites that represented the biggest challenge were “really remote,” primarily in the far north or along the eastern side of the Sierra Nevada mountains.
- Libraries were able to secure services themselves. For a variety of reasons 4CNet (the State University and Colleges telecommunications network). was not promoted as an Internet Service Provider for the Gates Library Initiative.
- There has been some upgrading of service from modems to direct-connects. Between 50% and 60% of the rural sites will have direct-connect access. Libraries typically start within their budgets and then increase service levels later. Many libraries want to increase service levels if they are able to secure discounts from the E-Rate or the California Teleconnect Fund.
- Frame-Relay and DSL telecommunications services are popular among the libraries and work very well for the Gates access model.
- The existence of consortia such as the Black-Gold and San Joaquin Valley Cooperative Library System telecommunications networks makes the Gates Library Initiative’s work much easier.
- Internal wiring does not seem to be a significant obstacle. Libraries receive wiring stipends of \$750-\$1,000 to help them connect the computers to network devices.
- Network security for GLI installations does not appear to be a significant problem because of the network architecture of the installation and the use of Windows NT profiles, policies and permissions.

Based on the findings of the GLI project, State Library staff conclude that adequate service exists to support access levels needed by that program. Adding more workstations that require a higher speed of connectivity may be difficult in some isolated areas either because the service is too expensive or not available at all. Telecommunications discount programs should provide a high level of support for ongoing costs. The concept of subsidizing some of the most expensive connections may be worth exploring.

While the Gates Library Initiative provides access for public libraries, it does not provide access for non-public libraries. The Gates model can serve as a useful template for Library of California access at non-public libraries. The Board may wish to direct staff to further develop the concept of a minimum access standards model for future consideration.

### ***LIBRARY OF CALIFORNIA ACT***

The direction of the Library of California (LoC) telecommunications program, as established in the Library of California Act is as follows:

#### *Statewide:*

18850. The state board shall make available all of the following:

- (a) A telecommunications infrastructure to ensure that all participating libraries have equitable access to the resources and services of all other California libraries.
- (b) A statewide communications system between and among regional library networks, statewide resource libraries, information agencies, and all other organizations or institutions participating in the programs authorized by this chapter.

#### *Regional:*

18842. Each regional library network shall do all of the following:

- (a) Make available a telecommunications system for the transfer of information and communications among its members.
- (b) Provide regional communications based upon the most effective methods of exchanging information among its members.

#### *Initial Implementation:*

Article 8. Transition

18870.

SEC. 2. The sum of five million dollars (\$5,000,000) is hereby appropriated from the General Fund to the Library of California Board for the purpose of funding the startup phase of the Library of California as set forth in Chapter 4.5 (commencing with Section 18800) of Part 11 of the Education Code for expenditure in the 1998-99 fiscal year to pay the costs of all of the following:

(a) Telecommunications infrastructure to support up to 1,000 libraries, including, but not limited to, the costs of linking systems and installing regional servers.